



## **NC3123 Fast Ethernet Server Adapter**

User Guide

Fourth Edition (June 2007)  
Part Number 234601-00D  
Compaq Computer Corporation

## Notice

© 2001, 2007 Compaq Information Technologies Group, L.P.

Compaq, the Compaq logo, and ProLiant are registered in U.S. Patent and Trademark Office.

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States and other countries.

Intel is a trademark of Intel Corporation in the United States and other countries.

The Open Group and UNIX are trademarks of The Open Group in the United States and other countries.

All other product names mentioned herein may be trademarks of their respective companies.

Compaq shall not be liable for technical or editorial errors or omissions contained herein. The information in this document is provided “as is” without warranty of any kind and is subject to change without notice. The warranties for Compaq products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty.

Compaq NC3123 Fast Ethernet Server Adapter User Guide  
Fourth Edition (June 2007)  
Part Number 234601-00D

# Contents

## About This Guide

Symbols in Text.....	v
Compaq Technician Notes .....	vi
Where to Go for Additional Help .....	vi
Compaq Customer Support .....	vii
Compaq Website .....	vii
PaqFax Number.....	vii
Calling the Compaq Support Line.....	viii

## Chapter 1

### Introduction

Overview .....	1-1
Hardware Overview .....	1-1
NC3123 Connector.....	1-2
LED Indicators .....	1-3
Wake on LAN .....	1-3

## Chapter 2

### Installing the Adapter

Electrostatic Discharge Precautions .....	2-1
Installing the Adapter in a Server .....	2-2
Connecting the Network Cable .....	2-3
Connecting the Wake on LAN Power Cable.....	2-3
Configuring the WOL Feature and Installing the WOL Power Cable.....	2-3

## Appendix A

### Regulatory Compliance Notices

Federal Communications Commission Notice .....	A-1
Modifications .....	A-1
Declaring of Conformity for Products Marked with the FCC Logo – United States Only .....	A-1
Canadian Notice .....	A-2
European Union Notice .....	A-2
China Taiwan Notice.....	A-3
Japanese Notice .....	A-3

## *Appendix B*

### **Electrostatic Discharge**

Grounding Methods.....	B-1
------------------------	-----

## *Appendix C*

### **Specifications**

NC3123 Fast Ethernet Server Adapter Specifications.....	C-1
UTP Cable Specifications.....	C-2
10BASE-T.....	C-2
100BASE-T.....	C-2
RJ-45 Pinouts and Crossover Function .....	C-2
10/100 Straight-Through Pinouts .....	C-2
10/100 Crossover Pinouts.....	C-3

# About This Guide

This user guide can be used for reference when installing a Compaq NC3123 Fast Ethernet Server Adapter.



**WARNING:** To reduce the risk of personal injury from electrical shock and hazardous energy levels, only authorized service technicians should attempt to repair this equipment. Improper repairs could create conditions that are hazardous.

---

**IMPORTANT:** The installation of options and servicing of this product shall be performed by individuals who are knowledgeable of the procedures, precautions, and hazards associated with equipment containing hazardous energy circuits.

---

## Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.



**WARNING:** Text set off in this manner indicates that failure to follow directions in the warning could result in bodily harm or loss of life.

---



**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

---

**IMPORTANT:** Text set off in this manner presents clarifying information or specific instructions.

---

**NOTE:** Text set off in this manner presents commentary, sidelights, or interesting points of information.

## Compaq Technician Notes



**WARNING:** Only authorized technicians trained by Compaq should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard. Any indications of component replacement or printed wiring board modifications may void any warranty.

---



**WARNING:** To reduce the risk of personal injury from electrical shock and hazardous energy levels, do not exceed the level of repair specified in these procedures. Because of the complexity of the individual boards and subassemblies, do not attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs could create conditions that are hazardous.

---



**WARNING:** To reduce the risk of electric shock or damage to the equipment:

- If the system has multiple power supplies, disconnect power from the system by unplugging all power cords from the power supplies.
  - Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
  - Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- 



**CAUTION:** To properly ventilate your system, you must provide at least 12 inches (30.5 cm) of clearance at the front and back of the computer.

---



**CAUTION:** The computer is designed to be electrically grounded. To ensure proper operation, plug the AC power cord into a properly grounded AC outlet only.

---

## Where to Go for Additional Help

HP updates networking software frequently to include new functionality and features. Complete the following steps to get the latest drivers, firmware, and documentation.

1. Go to the HP website (<http://www.hp.com>).
2. Click **Support and Troubleshooting Information** from the left menu bar.
3. Type the product name in the **for product** box and press **Enter**. For example, type NC370T.
4. Download the drivers, firmware, or documentation as needed.

## Compaq Customer Support

You can reach Compaq automated support services 24 hours a day, every day at no charge. The services provide the most up-to-date information about Compaq products. You can access installation instructions, troubleshooting information, and general product information from the Compaq website.

For comprehensive online support, refer to:

[www.compaq.com](http://www.compaq.com)

For international information, refer to:

[www.compaq.com/corporate/overview/world\\_offices.html](http://www.compaq.com/corporate/overview/world_offices.html)

## Compaq Website

For Compaq Web-based support services, visit

<http://www.compaq.com/support>

Navigate to a specific product and then look for support information from this list of support resources.

For a complete list of available SoftPaq files, navigate to:

<http://www.compaq.com/support/files/allsp.html>

Send email to:

[support@compaq.com](mailto:support@compaq.com)

## PaqFax Number

The Compaq fax-on-demand retrieval system provides product-specific information. To use the fax system, you must be in North America and you must have a fax machine or fax modem to receive the automated fax transmittals. Call 1-800-345-1518, option 1, and request a product catalog. After you receive the catalog, you can order the documents through the Compaq fax-on-demand retrieval system.

## **Calling the Compaq Support Line**

When you call the Compaq Support line, you must be at your server with your software running and the product documentation at hand. The Compaq technician may ask for the following information:

- Your address and telephone number
- The name and model number of the Compaq product you are calling about
- The serial number of your Compaq product
- The names and version numbers of the software you are using to operate the Compaq product
- The name and version number of the operating system you are using
- The system type (manufacturer and model number)
- The expansion boards or add-in cards in your server
- The amount of memory in your server

### **North America**

The Compaq Customer Support department for North America can be reached at 1-800-652-6672 (1-800-OKCOMPAQ). For continuous quality improvement, calls may be monitored or recorded.

### **Europe, the Middle East, and Africa**

In Europe, the Middle East, and Africa, contact your local Compaq authorized service provider. Details of your local Compaq authorized service provider can be obtained from your Compaq authorized reseller, dealer, or from the Compaq website at

<http://www.compaq.com>

### **Worldwide Access**

Compaq has technical support centers worldwide. Many of the centers are staffed by technicians who speak the local languages. For a list of Compaq support centers, go to:

<http://www.compaq.com>

From the Compaq Worldwide home page, select your country and click Go to find the nearest Compaq office.

# Chapter 1

## Introduction

### Overview

The Compaq NC3123 Fast Ethernet Server Adapter is a second-generation adapter with PCI 10/100 Wake On LAN (WOL). It features one auto-negotiating RJ-45 port and LED indicators showing link, activity, and port speed. The NC3123 Server Adapter is a supported option for selected Compaq *ProLiant*™ servers.

For the latest functionality, features, and operating system support for this adapter, see the HP website

(<http://h18004.www1.hp.com/products/servers/networking/index-nic.html>).

### Hardware Overview

The Compaq NC3123 Server Adapter uses a PCI 2.1/2.2 bus architecture with the Intel 82559 chipset. The adapter supports emerging standards for system manageability and power management, such as ACPI and PC99.

Hardware specifications for the NC3123 Server Adapter are provided in Appendix C.

## NC3123 Connector

The Compaq NC3123 Server Adapter has one RJ-45 port and auto-negotiates 10 or 100 Mb/s, full- or half-duplex depending on the device to which it is connected.

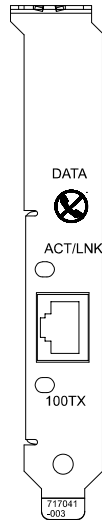


Figure 1-1. Compaq NC3123 Server Adapter

For information about connecting cables, see “Connecting the Network Cable” in Chapter 2.

---

**IMPORTANT:** If you are using the NC3123 Server Adapter in a residential environment, you must use a Category 5 (or better) cable.

---

## LED Indicators

The Compaq NC3123 Server Adapter has LED indicators for link, activity, and speed (10 or 100 Mb/s), as described in the following table.

**Table 1-1**  
**NC3123 Server Adapter LED Indicators**

LED	Status	Description
LNK	On	The NC3123 adapter and hub or switch are receiving power. The cable connection is good.
	Off	The NC3123 adapter and hub or switch are not receiving power. The cable connection between the adapter and hub or switch is faulty.
ACT	On or flashing	The NC3123 adapter is receiving direct packets or broadcast packets for this specific adapter. When sending packets, the ACT light is also active due to network acknowledgments being received.
	Off	The NC3123 adapter is not receiving direct packets or broadcast packets.
100 Mb/s	On	The NC3123 adapter is operating at 100 Mb/s.
	Off	The NC3123 adapter is operating at 10 Mb/s.

## Wake on LAN

For the Wake on LAN (WOL) feature to operate properly, the NC3123 Server Adapter must be connected to a continuous power source. This allows the adapter to listen to the network even when the computer is powered off.

The WOL feature lets designers build adapters that can “listen to” network activity even when the computer is powered off. WOL adapters have a special low-power standby mode that is active when the rest of the computer is without power. The adapter will respond to a special “wake-up” packet sent by another computer or network device. Typically this wake-up packet causes the adapter to signal the computer to power up.

See “Connecting the Wake on LAN (WOL) Power Cable” in Chapter 2.

## Installing the Adapter

This chapter describes installation precautions and explains how to install the adapter. It also describes how to connect the network cable.



---

**WARNING:** To avoid the risk of personal injury or damage to the equipment, consult the safety information and user documentation provided with your equipment before attempting the installation of the adapter.

Many computers are capable of producing energy levels that are considered hazardous. Users should not remove enclosures nor should they bypass the interlocks provided for removal of these hazardous conditions.

Installation of this adapter should be performed by individuals who are both qualified in the servicing of computer equipment and trained in the hazards associated with products capable of producing hazardous energy levels.

---

**NOTE:** Before removing the cover of your server, refer to the Compaq documentation for the proper methods for installing a PCI card and avoiding electric shock hazards.

## Electrostatic Discharge Precautions

A discharge of static electricity from a finger or other conductor can damage components on the adapter. This can make the adapter inoperable. In addition to the following information, see Appendix B for more precautions.

To prevent electrostatic damage, observe the following precautions:

- Always properly ground yourself when touching a static-sensitive component or assembly.
- Avoid hand contact by transporting and storing parts in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free locations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.

## Installing the Adapter in a Server

Refer to the Compaq ProLiant server documentation for additional information on how to safely install a PCI card in your server.

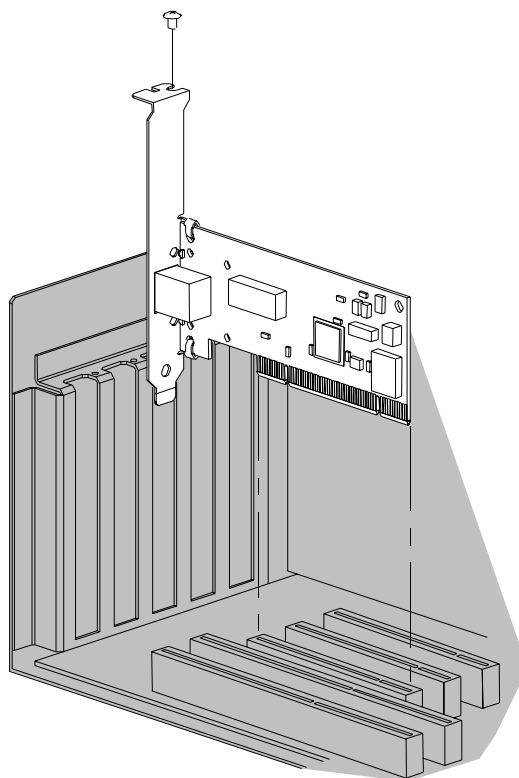


Figure 2-1. Installing the adapter in a server

1. If the server is not PCI Hot Plug compliant, power down the server and unplug the power cord.
2. Remove the server cover and the cover bracket from a PCI slot.



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching them.

---



**CAUTION:** If the device is not PCI Hot Plug compliant, power down the device and unplug the power cord from the power outlet before removing the device cover. Failure to do so may damage the adapter or server.

---

3. Firmly seat the adapter in a PCI slot and secure the adapter bracket with a screw or clip.
4. If you are using the Wake on LAN (WOL) feature, refer to the “Connecting the Wake on LAN Power Cable” section of this chapter. If you are not using this feature, replace the server cover and plug the power cord into the outlet.

## Connecting the Network Cable

The NC3123 Server Adapter has one RJ-45 port for 32-bit PCI 10/100 operation. Network connections for this adapter can employ existing UTP Category 5 (or better) cable for 100 Mb/s operation, and Category 3 (or better) cable for 10 Mb/s operation.

To secure the cable, plug the cable connector into the RJ-45 port. Ensure that the tab on the plug clicks into position, indicating that it is properly seated.

For more information, see the section, “UTP Cable Specifications” in Appendix C.

To configure the NC3123 Server Adapter, continue with the procedures specific to your operating system as described in the Network Adapter Software and Configuration Guide on the HP website (<http://www.hp.com>).

## Connecting the Wake on LAN Power Cable

**NOTE:** If your server is PCI 2.2 Hot Plug compliant, you do not need to install a Wake on LAN (WOL) power cable. However, you may need to set up the system BIOS to enable the WOL feature. See the section, “Configuring the WOL Feature and Installing the WOL Power Cable.”

For the WOL feature to work correctly, the NC3123 Server Adapter must be connected to a continuous power source. This allows the adapter to listen to the network even when the computer is powered down.



**WARNING:** Before installing the WOL cable, power down the server and unplug the power cord. Failure to do so could damage the NC3123 Server Adapter or the server. The WOL connector on your motherboard is live when the server is plugged into a power outlet.

---

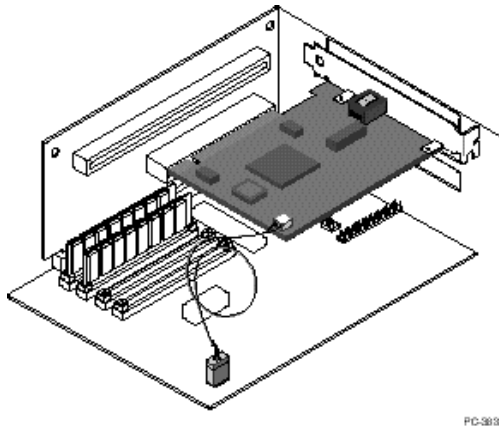
## Configuring the WOL Feature and Installing the WOL Power Cable

Some servers may require you to change a setting in the BIOS or Setup program to enable the WOL feature. If your system is PCI 2.2 Hot Plug compliant, follow these steps to set up the BIOS to enable the WOL feature.

1. Check your server owner’s manual or contact your dealer for more information.
2. Replace the server cover and plug the power cord into the power outlet.

If your system is not PCI 2.2 Hot Plug compliant, follow these steps to install the WOL power cable.

1. Ensure that your server is unplugged from the power outlet.
2. Locate the WOL connector on the NC3123 Server Adapter. Attach one end of the WOL cable to the adapter as shown in Figure 2-2. Note that the connector is keyed.



PC-58182

Figure 2-2. WOL cable and connector on the NC3123 Server Adapter

3. Locate the WOL connector on your motherboard. The location varies, depending on vendor and model of motherboard. The WOL connector is usually located near other power connectors, such as the LED connectors.
4. Connect the other end of the WOL cable to the connector on the motherboard as shown in Figure 2-2. Note that the connector is keyed.
5. Some servers may require you to change a setting in the BIOS or Setup program to enable the WOL feature. Check your server owner's manual or contact your dealer for more information.
6. Replace the server cover and plug the power cord into the power outlet.

## **Regulatory Compliance Notices**

### **Federal Communications Commission Notice**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

### **Modifications**

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

### **Declaring of Conformity for Products Marked with the FCC Logo – United States Only**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding your product, contact:

Compaq Computer Corporation  
P. O. Box 692000, Mail Stop 530113  
Houston, Texas 77269-2000

or call 1-800-652-6672 (1-800-OK COMPAQ). (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact:

Compaq Computer Corporation  
P. O. Box 692000, Mail Stop 510101  
Houston, Texas 77269-2000

or call (281) 514-3333.

To identify this product, refer to the Part, Series, or Model number found on the product.

## **Canadian Notice**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

### **Avis Canadien**

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## **European Union Notice**

Products with the C0E Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

- EN55022 (CISPR 22) – Electromagnetic Interference
- EN55024 (IEC61000-4-2,3,4,5,6,8,11) – Electromagnetic Immunity
- EN61000-3-2 (IEC61000-3-2) – Power Line Harmonics
- EN61000-3-3 (IEC61000-3-3) – Power Line Flicker
- EN60950 (IEC950) – Product Safety

## China Taiwan Notice

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

## Japanese Notice

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

## Electrostatic Discharge

To prevent damage to the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

### Grounding Methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm  $\square$  10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have a Compaq authorized reseller install the part.

**NOTE:** For more information on static electricity or assistance with product installation, contact your Compaq authorized reseller.

## Specifications

### NC3123 Fast Ethernet Server Adapter Specifications

**Table C-1**  
**NC3123 Fast Ethernet Server Adapter Specifications**

Specification	Description
Network Controller Chipset	Intel 82559 MAC/PHY
Wake on LAN	3-pin header or PCI 2.2 bus
Data Transfer Method	32-bit/33MHz PCI (Bus Master DMA)
Standards Supported (Varies by OS)	IEEE 802.3, 802.3u, 802.3ad (static configuration mode only), 802.3x, 802.1p, and 802.1Q
Dimensions	5.4 x 4.8 inches (L X W), 13.7 cm x 12.2 cm (including bracket)
Connector and Distances	One RJ-45, 100 meters (328 feet) on Category 5
Interrupts Supported	Automatically configured
Temperature Range	Operating: 0° C to 55° C / 32° F to 131° F Storage: -65° C to 85° C / -85° F to 185° F
Relative Humidity	Operating: 10% to 90% Storage: 5% to 95%
Agency Approvals	<div> <div> ■ FCC Class B  ■ VCCI Class B  ■ BSMI Class A  ■ CISPR 22 Class B  ■ EN60950 </div> <div> ■ EN55022 Class B  ■ EN55024  ■ UL  ■ Canada UL  ■ ICES-003 Class B </div> </div>
Power Requirement	200 mA @ 5V DC max
Data Transmission Rate	10/100 (Full- and Half-duplex)

## UTP Cable Specifications

To connect to the network, the NC3123 adapter uses the following cable.

### 10BASE-T

- Category 3 or better UTP twisted-pair
- 22-26 AWG, 100Ω at 1MHz
- EIA/TIA 568a or EIA/TIA 568b

### 100BASE-T

- Category 5 or better UTP twisted pair
- 22-26 AWG, 100Ω at 1MHz
- EIA/TIA 568a or EIA/TIA 568b

## RJ-45 Pinouts and Crossover Function

The Ethernet standard also specifies that each cable segment implement a crossover function to connect the transmitter of one device to the receiver of a device at the other end, and vice-versa. The crossover function may be implemented internally at the hub or switch, or externally through the twisted-pair media.

### 10/100 Straight-Through Pinouts

If the crossover function is implemented internally, the port is labeled MDI-X (Medium Dependent Interface-Crossover). When an MDI-X port is connected to an MDI port, the twisted-pair media should be wired straight-through using the physical pinouts indicated in Table C-2.

**Table C-2**  
**10/100 Pinouts Using Internal, Straight-Through Crossover**

Pin	Function	Color Match	Function	Pin
1	TD+	White/Orange	TD+	1
2	TD-	Orange/White	TD-	2
3	RD+	White/Green	RD+	3
4		Blue/White		4
5		White/Blue		5
6	RD-	Green/White	RD-	6
7		White/Brown		7
8		Brown/White		8

Figure C-1 shows the straight-through 10/100 connector wiring to be used when the crossover function is implemented on the hub or switch.

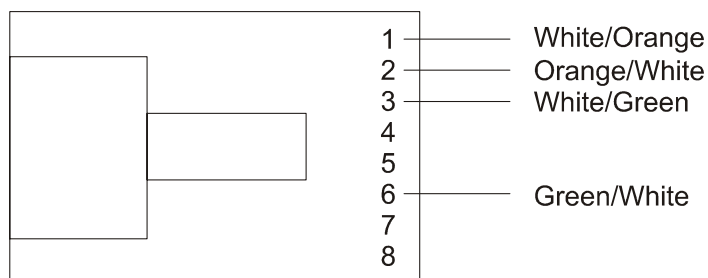


Figure C-1. 10/100 straight-through wiring for RJ-45 connector

## 10/100 Crossover Pinouts

When the crossover function is not provided within the hub or switch, you must implement the crossover through the twisted-pair media using the physical pinouts indicated in Table C-3.

**Table C-3**  
**10/100 Pinouts Using External Crossover**

Pin	Function	Color Match	Function	Pin
1	TD+	White/Orange	RD+	3
2	TD-	Orange/White	RD-	6
3	RD+	White/Green	TD+	1
4		Blue/White		
5		White/Blue		
6	RD-	Green/White	TD-	2
7		White/Brown		
8		Brown/White		

Figure C-2 shows the correct 10/100 wiring to use when the crossover function is implemented externally in the twisted-pair cabling.

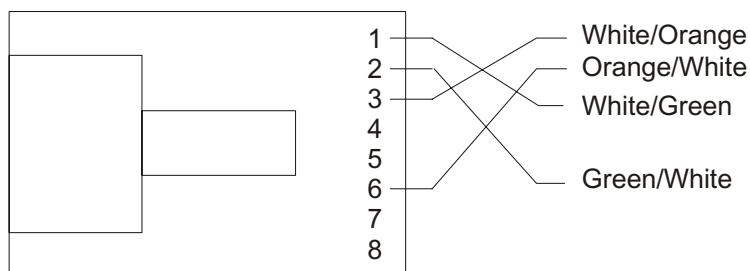


Figure C-2. 10/100 external crossover for RJ-45 connector